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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/965,691	09/27/2001	Ibrahim Mostafa Kamel	9432-000136	4401

27572 7590 08/11/2005		EXAMINER
HARNESS, DICKEY & PIERCE, P.L.C.		SALL, EL HADJI MALICK
P.O. BOX 828		
BLOOMFIELD HILLS, MI 48303	ART UNIT	PAPER NUMBER
	2157	

DATE MAILED: 08/11/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

	Application No.	Applicant(s)
Office Action Summary	09/965,691	KAMEL ET AL.
	Examiner	Art Unit	
	El Hadji M. Sall	2157	

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>09 May 2005</u>.

2a)☒ This action is **FINAL**.   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-9* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-9* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All   b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage
application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☐ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ .

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____.

DETAILED ACTION

1.   This action is responsive to the application filed on September 27, 2001. Claims 1-10 are pending. Claim 1, 3, 8 and 10 are amended. Claims 1-10 represent dynamic multicast grouping for vehicles and other mobile objects.

2.   *Claim Rejections - 35 USC § 102*

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

3.   Claims 1, 3, 7 and 8 are rejected under 35 U.S.C. 102(e) as being unpatentable over Jamalabad et al. (referred to hereafter as Jam) U.S. 6,574,633.

Jam teaches the invention as claimed including method for dynamically grouping limited range physical entities in a topological space.

As to claim 1, Jam teaches a method for grouping mobile entities, comprising:

defining a partitioning entity (column 2, lines 52-56, Jam discloses this invention utilizes standard physical space partitioning techniques along with entity characteristics to distribute them into limited size overlapping sets...);

constructing an initial data structure that defines a plurality of cells occupied by said mobile entities (column 3, lines 26-33, Jam discloses partitioning the topological space into functional grids...);

For each cell, electing a coordinator from a set of said mobile entities occupying that cell (column 4, lines 16-32, Jam discloses a device to dynamically group limited range entities in a topological space, comprising a data processor; the processor including a domain determiner to ascertain functional domains for each entity in the topological space, a footprint determiner to ascertain the range of effectiveness of each entity; an assignor to assign each entity as a member of each group whose range of effectiveness intersects the space of each of the group; column 1, lines 24-32, Jam discloses it becomes necessary to select an entity or various entities from a pool of entities (i.e. it can be broadly interpreted as "electing a coordinator from a set of mobile entities occupying that cell") to perform certain tasks within a topological area (i.e. can be broadly interpreted as "communicating the new partitioning scheme to the mobile entities"), and it is necessary to determine which node is the appropriate node to carry a particular signal when the cellular phone user travels from place to place).

Said coordinators cooperatively computing costs associated with selectively subdividing and merging said cells and communicating said costs to said partitioning entity (column 3, lines 61-63, Jam discloses the assigning step further comprises the step of calculating a membership value for each entity in each group; column 5, lines 13-16, Jam discloses Initial estimates of the functional domain spacing. 4) A scaling factor for each functional domain that the entities are viable. This is used to determine

the grid spacing; it is inherent that servers are present to assign, calculate the membership value, and coordinate the calculating membership value).

Partitioning entity using said costs to generate a new partition scheme and communicating said new partition scheme to said mobile entities (column 5, lines 1-31, Jam discloses with this input, the subject space can now be portioned as indicated in the grid creation step 103, the subject space is partitioned according to the initial estimates; column 4, lines 16-32, Jam discloses a device to dynamically group limited range entities in a topological space, comprising an assignor to assign each entity as a member of each group whose range of effectiveness intersects the space of each of the group (i.e. the discloses device is equated to the "selected coordinator" among the entities, and by assigning each entity as a member of each group, inherently the partitioning entity is communicating the new partitioning scheme to the mobile entities).

As to claim 3, Jam teaches the method of claim 1 wherein said step of cooperatively computing comprises:

each coordinator computing a first cost associated with subdividing that coordinator's cell (column 1, lines 24-32, Jam discloses... it is necessary to determine which node is the appropriate node to carry a particular signal when the cellular phone user travels from place to place...; column 3, lines 61-63, Jam discloses the assigning step further comprises the step of calculating a membership value for each entity in each group; column 5, lines 13-16, Jam discloses Initial estimates of the functional domain spacing. 4) A scaling factor for each functional domain that the entities are viable. This is used to determine the grid spacing); and

Using quad-tree data structure to identify sibling relationships among said coordinators to define sibling coordinators (column 5, lines 56-65, Jam discloses... his invention includes partitioning procedures such as binary space partitioning trees or quad- and cot-trees...); and

Said sibling coordinators collectively computing a second cost associated with merging cells occupied by said sibling coordinators (column 5, lines 1-31, Jam discloses...with this input, the subject space can now be portioned as indicated in the

grid creation step 103...the subject space is portioned according to the initial estimates).

As to claim 7, Jam teaches the method of claim 1 further wherein said partitioning entity generates said new partition scheme by dividing the one of said cells that gives the largest cost decrease (column 6, lines 38-48, Jam discloses... his value is a ratio of the volume of intersection of the footprint and grid space divided by the grid space volume).

As to claim 8, Jam teaches a system for grouping mobile entities comprising:

a partitioning server (column 2, lines 52-56, Jam discloses this invention utilizes standard physical space partitioning techniques along with entity characteristics to distribute them into limited size overlapping sets...);

Said partitioning server defining a data structure having nodes corresponding to cells occupied by said mobile entities (column 3, lines 26-33, Jam discloses partitioning the topological space into functional grids);

a plurality of client applications each associated with one of said mobile entities (column 2, lines 2-12, Jam discloses...Specific applications can concentrate on only one method of performing a task or what can be referred to as the morphology of the entity);

said client applications each having communication mechanism capable of communicating with the communication mechanism of other client applications and with said partitioning server (column 1, lines 24-32, Jam discloses in various applications, it becomes necessary to select an entity or various entities from a pool of entities to perform certain tasks within a topological area. For example, in cellular phone communications, it is necessary to determine which node is the appropriate node to carry a particular signal when the cellular phone user travels from place to place); and

said client applications and said partitioning server being configured to establish a dynamic partition protocol whereby data structure is reconfigured based on the

number of communicating entities within each of said cells (column 5, lines 56-65, Jam discloses...This invention includes partitioning procedures such as binary space partitioning trees or quad- and oct-trees...; abstract, Jam discloses limited range physical entities located in a topological space are dynamically grouped by partitioning the space into grids for different functional domains).

4.   ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5.   Claims 2, 4-6 and 9-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jamalabad et al. (referred to hereafter as Jam) U.S. 6,574,633 in view of Weisshaar et al. 6,757,262.

Jam teaches the invention substantially as claimed including method for dynamically grouping limited range physical entities in a topological space.

As to claim 2, Jam teaches the method of claim 1 further comprising:
Associating a group with each of said cells and using said group to support communication among mobile entities within each cell (column 3, lines 22-40, Jam

discloses associating a group with each grid that corresponds to a unique functional domain and unique topological space).

Jam did not teach explicitly a multicast group.

However, Weisshaar teaches service framework supporting remote service discovery and connection. Weisshaar teaches multicasting (column 17, line 51).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Jam in view of Weisshaar to provide associating a multicast group with each of said cells and using said multicast group to support communication among mobile entities within each cell. One would be motivated to do so to allow reduction of resources needed to service a network.

As to claim 4, Jam teaches the method of claim 1 comprising:

associating a vision domain with each of said entities (column 3, lines 25-26, Jam discloses determining functional domains for each entity in the topological space);

associating a group with each of said cells (column 5, lines 66-67, Jam discloses the next step 105 is group creation in which a group is associated with each grid space); and

enabling said entities to selectively join at least one of said multicast groups based on said vision domain (column 3, lines 36-37, Jam discloses assigning each entity to be a member of each group).

Jam did not explicitly teach multicast group.

However, Weisshaar teaches multicasting (column 17, line 51).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Jam in view of Weisshaar to provide associating a multicast group with each of said cells; and

enabling said entities to selectively join at least one of said multicast groups based on said vision domain. One would be motivated to do so to allow reduction of resources needed to service a network.

As to claim 5, Jam teaches the method of claim 1 further comprising associating a group with each of said cells, allowing said entities to join at least one of said groups and computing said costs by assessing the number of said groups entities have joined (column 5, lines 66-67, Jam discloses the next step 105 is group creation in which a group is associated with each grid space; column 3, lines 36-37, Jam discloses assigning each entity to be a member of each group; column 3, lines 36-40, Jam discloses assigning each entity to be a member of each group whose compared range of effectiveness intersects the compared grid space that is associated with the group; and storing the group memberships of each entity).

Jam did not teach explicitly multicasting.

However, Weisshaar teaches multicasting (column 17, line 51).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Jam in view of Weisshaar to provide associating a multicast group with each of said cells, allowing said entities to join at least one of said multicast groups and computing said costs by assessing the number of multicast groups said entities have joined. One would be motivated to do so to allow reduction of resources needed to service a network.

As to claim 6, Jam teaches the method of claim 1 further comprising associating a group with each of said cells and using said groups to communicate said new partition scheme to said mobile entities (column 3, lines 22-40, Jam discloses... associating a group with each grid that corresponds to a unique functional domain and unique topological space; ascertaining a range of effectiveness for each entity wherein the ascertaining step is performed for each functional domain to which an entity belongs...).

Jam did not teach explicitly multicast.

However, Weisshaar teaches multicasting (column 17, line 51).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Jam in view of Weisshaar to provide associating a multicast group with each of said cells and using said multicast groups to communicate said new

partition scheme to said mobile entities. One would be motivated to do so to allow reduction of resources needed to service a network.

As to claim 9, Jam teaches the system of claim 8 wherein said client applications each have memory for storing a vision domain corresponding to a predefined area of interest and said communication mechanism of each of said client applications is configured to join in multicast group communication mobile entities in cells that overlap with said vision domain (column 3, lines 22-40, Jam discloses...assigning each entity to be a member of each group whose compared range of effectiveness intersects the compared grid space that is associated with the group; and storing the group memberships of each entity...; column 3, lines 25-26, Jam discloses determining functional domains for each entity in the topological space).

Jam did not teach explicitly multicast group.

However, Weisshaar teaches multicasting (column 17, line 51).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Jam in view of Weisshaar to provide client applications each have memory for storing a vision domain corresponding to a predefined area of interest and said communication mechanism of each of said client applications is configured to join in multicast group communication mobile entities in cells that overlap with said vision domain. One would be motivated to do so to allow reduction of resources needed to service a network.

As to claim 10, Jam teaches a system according to claim 8 wherein said mobile entities having position location equipment that generates position data and wherein said client applications communicate to other client applications associated with mobile entities occupying a common cell (column 9, lines 14-22, Jam discloses... positional and coverage oriented relationship between the entities...).

Jam did not teach explicitly entities are vehicles.

However, Weisshaar teaches a vehicle position (column 4, line 65 – column 5, line 3).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Jam in view of Weisshaar to provide are vehicles having position location equipment that generates vehicle position data and wherein said client applications communicate said vehicle position data to other client applications associated with mobile entities occupying a common cell. One would be motivated to do so to allow mapping direction.

6.   *Response to Arguments*

Applicant's arguments filed 05/09/05 have been fully considered but they are not persuasive.

(A)   Applicant argues that Jamalabad does not teach selection of coordinators or that the partitioning entity communicates the new partitioning scheme to the mobile entities.

In regards to point (A), examiner respectfully disagrees.

Features such as the collection of information related to a host from a network switch are not in the claims.

(B)   Applicant argues that coordinator base stations are not selected to participate in forming the dynamic grouping, and there is no need for the mobile entities (cell phones) or even the base stations to know the dynamic grouping.

In regards to point (B), examiner respectfully disagrees.

Features such as coordinator base stations are not selected to participate in forming the dynamic grouping, and there is no need for the mobile entities (cell phones) or even the base stations to know the dynamic grouping are not in the claims.

(C)   Applicant argues that Jamalabad does not teach selection of coordinators or that the partitioning entity communicates the new partitioning scheme to the mobile entities.

In regards to point (C), examiner respectfully disagrees.

Column 4, lines 16-32, Jam discloses a device to dynamically group limited range entities in a topological space, comprising a data processor; the processor including a domain determiner to ascertain functional domains for each entity in the topological space, a footprint determiner to ascertain the range of effectiveness of each entity; an assignor to assign each entity as a member of each group whose range of effectiveness intersects the space of each of the group (i.e. the discloses device is equated to the "selected coordinator" among the entities, and by assigning each entity as a member of each group, inherently the partitioning entity is communicating the new partitioning scheme to the mobile entities).

Column 1, lines 24-32, Jam discloses it becomes necessary to select an entity or various entities from a pool of entities (i.e. it can be broadly interpreted as "electing a coordinator from a set of mobile entities occupying that cell") to perform certain tasks within a topological area (i.e. can be broadly interpreted as "communicating the new partitioning scheme to the mobile entities"), and it is necessary to determine which node is the appropriate node to carry a particular signal when the cellular phone user travels from place to place.

(D)   Applicant argues that each coordinator that is elected is a mobile device, that the coordinators participate in the grouping of the mobile entities by computing costs, and that the new partitioning scheme is communicated to the mobile entities. Thus, Jamalabad et al. does not teach all of the elements of independent claim 1.

In regards to point (D), examiner respectfully disagrees.

Column 1, lines 24-32, Jam discloses it becomes necessary to select an entity or various entities from a pool of entities (i.e. it can be broadly interpreted as "electing a coordinator from a set of mobile entities occupying that cell", where the selected entity is inherently a mobile entity since Jam discloses that it is necessary to determine which

node is the appropriate node to carry a particular signal when the cellular phone user travels from place to place) to perform certain tasks within a topological area (i.e. can be broadly interpreted as "communicating the new partitioning scheme to the mobile entities").

Column 3, lines 61-63, Jam discloses the assigning step further comprises the step of calculating a membership value for each entity in each group.

Column 5, lines 13-16, Jam discloses Initial estimates of the functional domain spacing. 4) A scaling factor for each functional domain that the entities are viable. This is used to determine the grid spacing; it is inherent that servers are present to assign, calculate the membership value, and coordinate the calculating membership value to the mobile entities.

(E)   Applicant argues that Weisshaar does not teach, suggest, or motivate electing coordinators from spatially defined sets of mobile entities, using the coordinators to compute costs of selectively subdividing and merging the sets, using the costs to generate a new partitioning scheme, and communicating that scheme to the mobile entities.

In regards to point (E), examiner respectfully disagrees.

Wisshaar was not used to reject these limitations. Wisshaar was used to fulfill the explicitly missing limitation that is multicasting.

7.   ***Conclusion***

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time

policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE

MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later

than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to El Hadji M Sall whose telephone number is 571-272-

4010. The examiner can normally be reached on 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Ario Etienne can be reached on 571-272-4001. The fax phone number for

the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see http://pair-direct.uspto.gov. Should

you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free).

El Hadji Sall

Patent Examiner

Art Unit: 2157

ARIO ETIENNE

SUPERVISORY PATENT EXAMINER

TECHNOLOGY CENTER 2100